Original Article

MEDICINE PALLIATIVE CARE

DOI: 10.47582/jompac.1396097

J Med Palliat Care. 2023;4(5):699-704

Turkish literature on hip arthroscopy: a bibliometric approach

Ozan Pehlivan[1], Furkan Soy[2], Mehmet Aydemir[3]

[1]Beytepe Murat Erdi Eker State Hospital, Department of Orthopaedics and Traumatology, Ankara, Turkey
[2]Kahramankazan State Hospital, Department of Orthopaedics and Traumatology, Ankara, Turkey
[3]Yozgat City Hospital, Department of Orthopaedics and Traumatology, Yozgat, Turkey

Cite this article as: Pehlivan O, Soy F, Aydemir M. Turkish literature on hip arthroscopy: a bibliometric approach. *J Med Palliat Care*. 2023;4(5):699-704.

Received: 25.11.2023 • **Accepted**: 27.12.2023 • **Published**: 31.12.2023

ABSTRACT

Aims: This study aimed to analyze research productivity and trends in Turkey using published articles on hip arthroscopy.

Methods: Studies indexed in the Science Citation Index Expanded (SCIE) and Emerging Sources Citation Index (ESCI) of the Web of Science (WoS) database from 1981 to 2023 have been examined. The analysis included the number of articles by year, country, institution, citation count, and journal of publication. Additionally, the Scopus database was analyzed for comparison.

Results: Research revealed 35 articles in the WoS database and 115 articles in the Scopus database as of November 2023. In the WoS database (journals published in the ESCI and SCIE indexes), Turkey ranked 16th out of 64 countries, while in the Scopus database, Turkey ranked 13th.

Conclusion: Compared to other countries, Turkey has a significantly low number of articles. However, the increase in publications aligns with the global trend.

Keywords: Bibliometric analysis, hip arthroscopy, publications

INTRODUCTION

The first recorded hip arthroscopy on cadavers took place in 1931, executed by Michael S. Burman.[1] In 1939, Takagi published the first clinical application.[2] This topic remained unpopular for an extended period. Subsequent studies were restricted until the commencement of the 1980s when numerous articles were published.[3] It has attracted interest, particularly in younger patients with hip pathology, as a non-arthroplasty and minimally invasive procedure.[4,5] This technique has proven effectiveness for various intra- and extra-articular hip problems. With the advancing comprehension of hip pathophysiology, hip arthroscopy is likely to have a greater impact on the diagnosis and management of hip disorders. Indications for hip arthroscopy will continue to evolve, leading to some indications gaining popularity while others become less effective and their use in these areas declines.[6-8] As the procedure becomes more popular, the industry will be incentivized to innovate, leading to quicker development of specialized hip instrumentation. Hip arthroscopy represents an exciting advancement in orthopaedic surgery with promising potential benefits for patients.[9,10]

Articles on hip arthroscopy began to be published globally in the 1980s, and the number of publications has since increased rapidly. The first article on this topic in Turkey was published in 2005. When analysing the number of articles, it is evident that there is an increasing trend both in Turkey and worldwide. However, this technically challenging method, which offers promising results for patients, is not currently available in Turkey. The evaluation of the current situation in Turkey is crucial for this technically challenging method that offers promising results for patients, as stated in the literature.

Bibliometric analyses are an effective method for tracking long-term research trends in a field.[11-14] This method enables objective evaluation of research contributions by different countries, institutions, journals, and authors in the scientific field. It further facilitates analysis of research trends and identification of current perspectives. Bibliometric studies are widely used in orthopaedics and remain popular today.[15-19] However, there are no bibliometric studies on hip arthroscopy in Turkey in the existing literature.

METHODS

Our study is a bibliometric analysis, and therefore does not require ethics committee approval. No ethical norms were violated during the development and publication of this research.

Numerous online databases are available for bibliometric analysis. This study chose Web of Science (WoS), Science Citation Index Expanded (SCI-E), and Emerging Sources

Corresponding Author: Ozan PEHLİVAN, pehlivanozan@gmail.com

This work is licensed under a Creative Commons Attribution 4.0 International License.

Citation Index (ESCI) for their high scientific quality and reliability. For the document type, "article" was selected. The WoS database was accessed on 15 November 2023, retrieving articles related to hip arthroscopy from around the world and Turkey between 1981 and November 2023. As the WoS database combines references to both 'Turkey" and 'Türkiye" as one entity, the corresponding data and percentages were merged to produce the final results.

Search terms, selected from the MESH library, were: "hip arthroscopy" [All Fields] OR "arthroscopy of the hip" [All Fields]. The literature, filtered using exclusion criteria from the study plan, was downloaded in Word and Excel file formats. The data obtained were then analyzed. Bibliometric parameters such as publication year, language used, first author's name, country of publication, total citations, journal title, and affiliated institutions were considered in the evaluation.

Excel files were utilized to create graphs and tables, employing percentage and frequency values for table creation. In addition to Scopus and WoS database's own graphs, the VOSviewer tool (Leiden University, The Netherlands) was used to produce bibliometric networks and visualizations.[20,21]

We opted to compare the Scopus database with the WoS database, using identical search criteria, keywords, and timeframes.

RESULTS

A total of 2,726 articles were indexed as SCI-E and ESCI in the WoS database worldwide. The first year with 10 or more studies on hip arthroscopy per year was 2001, and the first year with 100 or more studies was 2012. Years with 100 or more studies per year are shown in Table 1. Fifty percent of the studies on hip arthroscopy were conducted after 2018. In Turkey, the WoS database contains 35 studies on hip arthroscopy. The first study on this topic was published in 2005, with no more than five studies conducted in any given year (Table 2).

Table 1. According to the WOS database, more than 100 articles on hip arthroscopy have been published worldwide over the years

Year	Number of articles	% of 2726
2023	152	5.576
2022	256	9.391
2021	309	11.335
2020	265	9.721
2019	230	8.437
2018	222	8.144
2017	166	6.090
2016	182	6.676
2015	126	4.622
2014	144	5.282
2013	105	3.852
2012	102	3.742

Table 2. Distribution of studies in Turkey by year according to the Wos database

Years	Number of articles	% of 35
2023	5	14.286
2022	5	14.286
2021	1	2.857
2020	1	2.857
2019	4	11.429
2018	2	5.714
2017	5	14.286
2016	2	5.714
2015	2	5.714
2014	2	5.714
2013	2	5.714
2011	1	2.857
2010	1	2.857
2007	1	2.857
2005	1	2.857

In 64 countries, a total of 2,726 articles were indexed. Table 3 reveals that 22 countries published more than twenty articles; the USA emerged as the leader with 1,663 publications, followed by the UK (159 articles) and Germany (153 articles). Worldwide, 96.22% of publications were in English, with German in second place at 3.11%. All publications from Turkey were in English. With a total of 35 articles, Turkey ranks 16th in the number of articles published on hip arthroscopy. The majority (77.143%) of these papers were published in SCI-E indexed journals, with the remaining 22.857% in ESCI indexed journals. A total of 138 different institutions in Turkey have contributed to the literature on hip arthroscopy. İstanbul University (with 8 articles) and Ankara University (with 5 articles) were the most prolific institutions. Further details on leading publishing institutions are shown in Figure 1.

Table 3. According to WOS database results, the countries that publish the most on hip arthroscopy worldwide

Rank	Country	Number of articles	% of 2726
1	USA	1663	61.005
2	England	159	5.833
3	Germany	153	5.613
4	Canada	140	5.136
5	Australia	131	4.806
6	Switzerland	123	4.512
7	China	89	3.265
8	Spain	71	2.605
9	Japan	70	2.568
10	Israel	65	2.384
11	South Korea	63	2.311
12	Italy	53	1.944
13	Denmark	50	1.834
14	France	42	1.541
15	Mexico	38	1.394
16	Turkey	35	1.284
17	Sweden	33	1.211
18	Chile	30	1.101
19	Brazil	26	0.954
20	Ireland	25	0.917
21	Belgium	24	0.880
22	Egypt	21	0.770

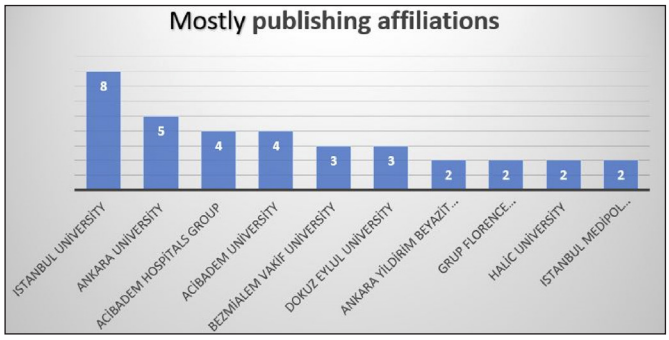

Figure 1. Mostly publishing affiliations

Research papers focusing on hip arthroscopy from Turkey received a total of 149 citations, averaging 4.26 citations per paper with an H-index of 7 (**Figure 2**). The article by Çetinkaya et al., published in 2016, was the most cited work on hip arthroscopy in Turkey according to the WoS database. Since its publication, it has been cited 23 times, averaging 2.88 citations per year. **Table 4** outlines the top 20 most cited papers on hip arthroscopy from Turkey, based on WoS database records.

Table 4. The top 20 most cited articles on hip arthroscpoy published in Turkey according to WOS database results

Title	Authors	Source title	Publication year	DOI	Total citations	Average per year
Arthroscopic labral repair versus labral debridement in patients with femoroacetabular impingement: a minimum 2.5 year follow-up study	Çetinkaya, et al.	Hıp Internatıonal	2016	10.5301/hipint.5000290	23	2.88
Arthroscopic treatment of femoroacetabular impingement: early outcomes	Polat, et al.	Acta Orthopaedıca Et Traumatologıca Turcıca	2013	10.3944/AOTT.2013.3041	18	1.64
The Effect of Traction Force and Hip Abduction Angle on Pudendal Nerve Compression in Hip Arthroscopy: A Cadaveric Model	Kocaoglu, et al.	Arthroscopy-The Journal Of Arthroscopıc And Related Surgery	2015	10.1016/j.arthro.2015.03.040	16	1.78
Avascular necrosis of the femoral head after hip arthroscopy	Şener, et al.	Hıp Internatıonal	2011	10.5301/HIP.2011.8693	16	1.23
Arthroscopic Retrograde Osteochondral Autologous Transplantation to Chondral Lesion in Femoral Head	Çetinkaya, et al.	Orthopedıcs	2014	10.3928/01477447-20140528-64	12	1.2
Arthroscopic-assisted retrograde mosaicplasty for an osteochondral defect of the femoral head without performing surgical hip dislocation	Kocadal, et al.	Sıcot-J	2017	10.1051/sicotj/2017030	8	1.14
Arthroscopic excision of acetabular osteoid osteoma in a 7-year-old patient	Aşık, et al.	Knee Surgery Sports Traumatology Arthroscopy	2015	10.1007/s00167-014-2978-5	8	0.89
Are pelvic anatomical structures in danger during arthroscopic acetabular labral repair? Definition of safe bone depth	Gereli, et al.	Knee Surgery Sports Traumatology Arthroscopy	2017	10.1007/s00167-015-3797-z	7	1
Arthroscopic bullet extraction from the hip in the lateral decubitus position	Sözen, et al.	Hıp Internatıonal	2010	10.1177/112070001002000221	7	0.5
Evidence for reliability, validity and responsiveness of Turkish version of Hip Outcome Score	Polat, et al.	Acta Orthopaedıca Et Traumatologıca Turcıca	2017	10.1016/j.aott.2017.05.001	6	0.86
Arthroscopic Fixation of a Posterior Acetabular Wall Fracture: A Case Report	Gürpınar, et al.	Cureus Journal Of Medıcal Scıence	2019	10.7759/cureus.6264	4	0.8
Arthroscopic Microfracture of Hip Chondral Lesions	Atilla, et al.	Arthroscopy Techniques	2017	10.1016/j.eats.2017.08.040	4	0.57
Arthroscopic diagnosis and treatment of an acetabular labrum bucket handle tear:: a case report	Sözen, et al.	Archıves Of Orthopaedıc And Trauma Surgery	2005	10.1007/s00402-005-0013-5	4	0.21
Hip arthroscopy for Legg-Calve-Perthes disease in paediatric population	Kanatlı, et al.	Acta Orthopaedıca Et Traumatologıca Turcıca	2019	10.1016/j.aott.2019.03.005	3	0.6
Bullet in Hip Joint	Kaya, et al.	Eurasıan Journal Of Medıcıne	2013	10.5152/eajm.2013.29	3	0.27
The effectiveness of peripheral compartment first access and periportal capsulotomy technique for arthroscopic management of femoroacetabular impingement: A prospective case series	Özbek, et al.	Acta Orthopaedıca Et Traumatologıca Turcıca	2021	10.5152/j.aott.2021.21174	2	0.67
Arthroscopic removal of an intraarticular bullet from the hip joint: A case report	Gürpınar, et al.	Journal Of The Pakıstan Medıcal Associatıon	2018		2	0.33
Robotic hip arthroscopy: a cadaveric feasibility study	Işık, et al.	Acta Orthopaedıca Et Traumatologıca Turcıca	2014	10.3944/AOTT.2014.3273	2	0.2
Comparison of Acetabular Labral Reconstruction With 7-mm Tibialis Anterior Allograft and 5-mm Iliotibial Band Autograft at Minimum 2-Year Follow-up	Kocaoğlu, et al.	Amerıcan Journal Of Sports Medıcıne	2022	10.1177/03635465221077114	1	0.5
Diabetic hip arthropathy is associated with a higher prevalence of femoral head chondromalacia: a case-controlled study	Luo, et al.	Hıp Internatıonal	2019	10.1177/1120700018813829	1	0.2

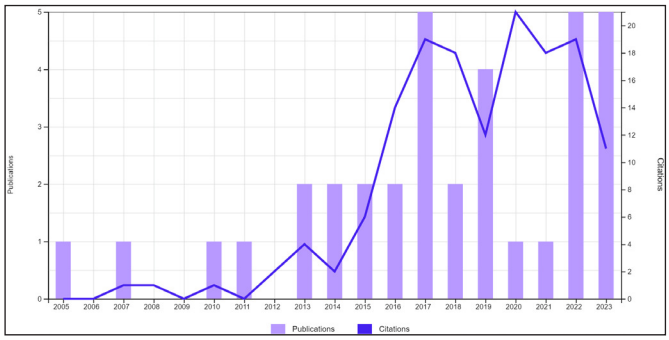

Figure 2. The publication years and number of citations of articles originating from Turkey

Articles on hip arthroscopy from Turkey indexed in the WOS database were mostly published in Acta Orthopaedica et Traumatologica Turcica (7 articles), Hip International (6 articles), Arthroscopy Techniques (2 articles), Arthroscopy: The Journal of Arthroscopic and Related Surgery (2 articles) and Cureus Journal of Medical Science (2 articles).

Results of Analyzing the WoS Database with the VOSviewer

Keyword analysis: Turkish studies from the WoS database were examined using the VOSviewer application to identify and analyze frequently occurring keywords. We identified 85 unique keywords that occurred at least once. The size of each node represents the frequency of each keyword, while the lines connecting the nodes indicate co-occurrence relationships (Figure 3). The most common keywords were hip arthroscopy (18 instances), arthroscopy (7 instances), femoroacetabular impingement (6 instances), and hip (4 instances) (Table 5).

Table 5. The mostly occured keywords on hip arthroscopy published in Turkey according to WOS database results

Keyword	Occurrences	Total link strength
Hip arthroscopy	18	57
Arthroscopy	7	25
Femoroacetabular impingement	6	19
Hip	4	16
Labrum	2	9

Scopus Database Results

According to the Scopus database, 6,475 articles were published globally from 1981 to 2023, with the number of articles consistently rising. Analysis of studies from Turkey revealed 115 articles published between 2005 and 2023. The number of articles in Turkey increased rapidly in the last two years (Figure 4).

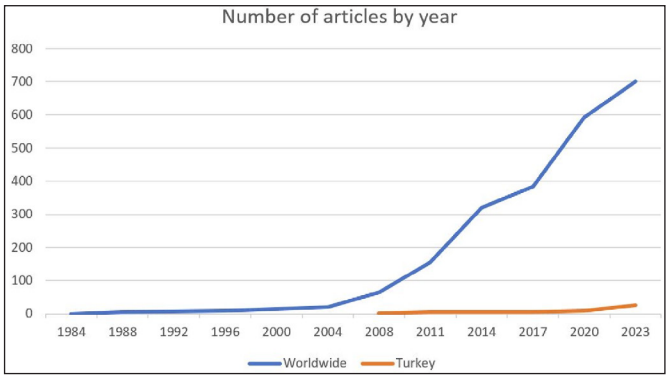

Figure 4. Publications per year according to Scopus database

The USA has the highest number of publications in the field of hip arthroscopy worldwide, with 3,299 papers. The United Kingdom is second with 440 publications, followed by China with 433. With 115 publications, Turkey ranks 13th globally (Figure 5).

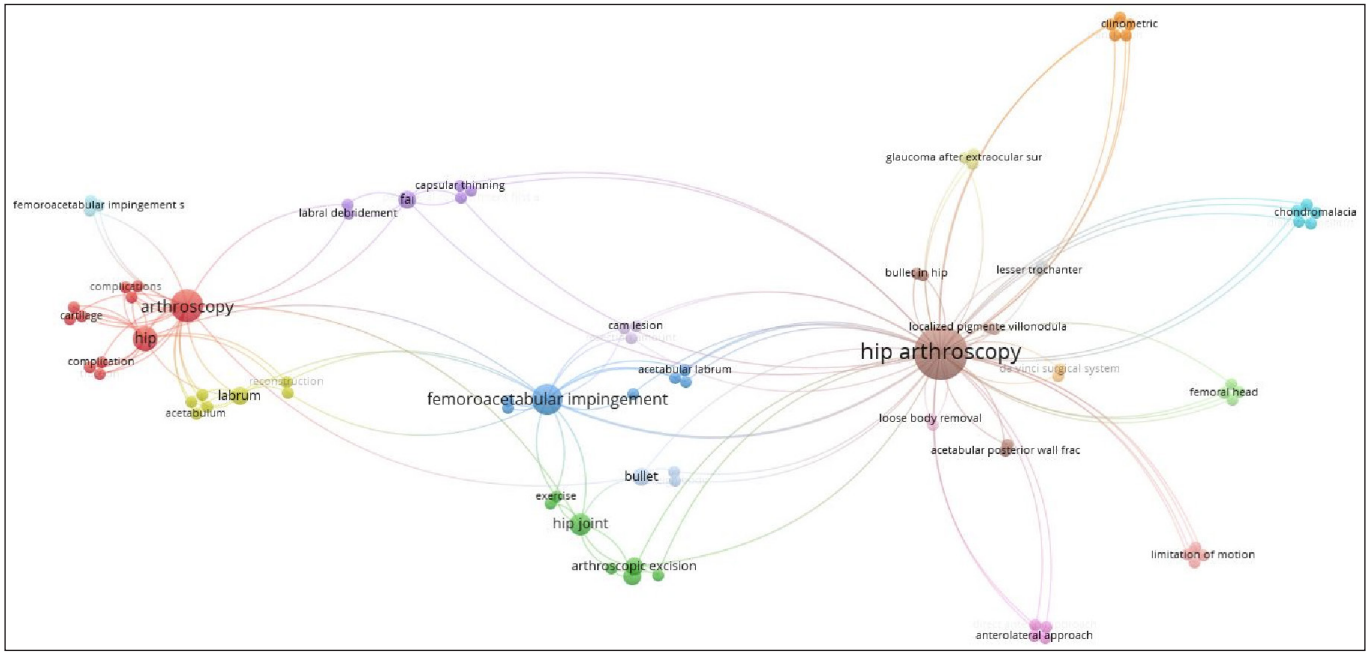

Figure 3. VOSviewer results of keyword analysis

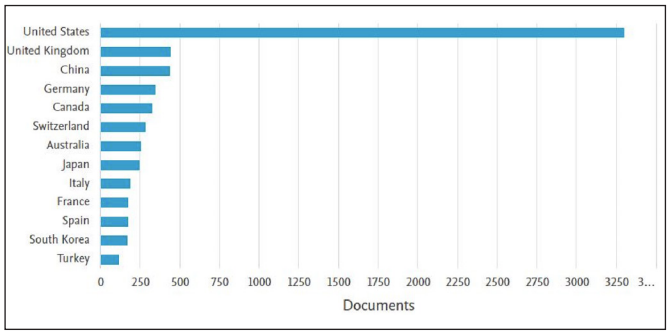

Figure 5. Number of publications from Scopus by country

İstanbul University (14 publications), İstanbul Medical Faculty (10 publications), Ankara University (9 publications), Dokuz Eylül University (8 publications), and Hacettepe University (8 publications) made the most significant contributions to the literature on hip arthroscopy in Turkey.

The highest number of articles on hip arthroscopy from Turkey, indexed in the Scopus database, were published in Acta Orthopaedica et Traumatologica Turcica (10 articles), followed by Hip International (9 articles). Figure 6 provides an overview of the most published journals on hip arthroscopy from Turkey.

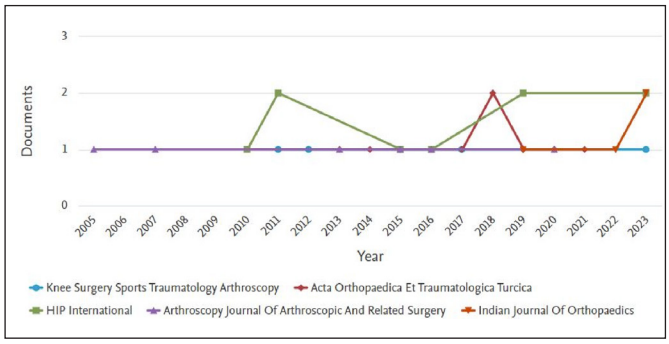
Documents
0
1
2
3
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023
Year
Knee Surgery Sports Traumatology Arthroscopy
Acta Orthopaedica Et Traumatologica Turcica
HIP International
Arthroscopy Journal Of Arthroscopic And Related Surgery
Indian Journal Of Orthopaedics

Figure 6. Distribution of publications originating from Turkey according to journals in the Scopus database

DISCUSSION

The first recorded article on hip arthroscopy in the WoS database dates back to 1981. The number of publications has grown annually, surpassing 10 articles annually in 2001 and 100 articles annually in 2012. In Turkey, the first publication was in 2005, showing an increasing trend over the years. Similar outcomes were observed in the Scopus database. The rise in the quantity of publications in recent years indicates the growing interest in hip arthroscopy, a trend expected to continue.

Bibliometric studies reveal the scientific effectiveness and contributions of countries. After examining databases such as WoS and Scopus, the results consistently highlight the extensive dominance of the USA. Turkey ranks 16th in the number of articles published on hip arthroscopy according to the WoS database and 13th according to the Scopus database. An evident correlation exists between the financial development of countries and their contributions to science.

English is the predominant language of publication, accounting for 96.22% in the WoS database and 95% in Scopus. All publications from Turkey were in English, highlighting English as the primary language for scholarly literature.

Based on WoS database findings, Turkey has produced 35 articles on hip arthroscopy. A total of 77.143% of these articles were published in SCI-Expanded journals, while 22.857% were published in ESCI indexed journals. Compared to this, Scopus reported 115 articles related to hip arthroscopy from Turkey. This difference could be attributed to the difference in the number of journals indexed by Scopus and ECSI/SCIE. The Scopus database covers a larger number of journals than the WoS database.

Bibliometric analysis also identifies leading institutions in a field. According to the WoS database, despite contributions from 138 different institutions, İstanbul University (8 articles) and Ankara University (5 articles) were significant contributors. Scopus results showed İstanbul University with 14 articles, followed by İstanbul Faculty of Medicine (10 articles) and Ankara University (9 articles). Most literature emanated from established institutions in Turkey's major cities, likely due to better resources and support for publishing.

We summarized the top 20 most cited articles from Turkey, based on WoS database data. These articles received a total of 149 citations, averaging 4.26 citations each, with an H-index of 7. However, these figures are relatively low compared to the global literature.

In both the WoS database and Scopus, Orthopaedica et Traumatologica Turcica and Hip International published the greatest number of articles on hip arthroscopy in Turkey. Identifying journals with a high percentage of articles on a specific topic can guide authors in selecting journals for future studies. In this context, bibliometric analysis can be useful.

Keywords are crucial in understanding reader interests and the information needed to meet those interests. In studies from Turkey, prominent keywords were hip arthroscopy, arthroscopy, femoroacetabular impingement, and hip. These terms are generally used, but with more articles, keyword frequencies are expected to cluster around more specific terms.

CONCLUSION

This study's results will aid in reviewing and evaluating the literature on hip arthroscopy from Turkey. Turkey was not among the top ten countries in terms of the number of publications. The analysis of publication years indicates that hip arthroscopy has become more popular in recent years, but the rate of increase in Turkey has not matched that of the world. Hip arthroscopy has gained significant attention in the orthopaedic literature over the past two decades, and this trend is anticipated to continue.

ETHICAL DECLARATIONS

Ethics Committee Approval: Since the study is a bibliometric analysis, there is no need for an ethics committee approval.

Informed Consent: Since the study is a bibliometric analysis, there is no need for an informed consent.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

REFERENCES

1. Burman MS. Arthroscopy or the direct visualization of joints: an experimental cadaver study. 1931. Clin Orthop Relat Res. 2001;390:5-9. doi:10.1097/00003086-200109000-00003
2. Tatsr JJ. The arthroscope: the second report. J Jpn Orthop Assoc. 1939;14:441-466.
3. Lubowitz JH, Poehling GG. Hip arthroscopy: an emerging gold standard. Arthroscopy J Arthroscopic Related Surg. 2006;22(12):1257-1259. doi:10.1016/j.arthro.2006.10.002
4. Jamil M, Dandachli W, Noordin S, Witt J. Hip arthroscopy: indications, outcomes and complications. Int J Surg. 2018;54:341-344. doi:10.1016/j.ijsu.2017.08.557
5. Degen RM, Pasic N, Baha P, Getgood A, Burkhart TA. Biomechanical evaluation of a hybrid suture and anchor-based hip capsular repair. Clin Biomech. 2021;81:105246. doi:10.1016/j.clinbiomech.2020.105246
6. Brunner A, Horisberger M, Herzog RF. Sports and recreation activity of patients with femoroacetabular impingement before and after arthroscopic osteoplasty. Am J Sports Med. 2009;37(5):917-922. doi:10.1177/0363546508330144
7. Su CA, Trivedi NN, Salata MJ, Voos JE. Advances in Hip Arthroscopy. Techniques Orthop. 2021;36(3):210-215. doi:10.1097/BTO.0000000000000495
8. Volpin A, Maiden C, Biz C, Hossain F, Zagra L, Konan S. Hip arthroscopy current advances. Acta Orthop Belg. 2020;86(e-Suppl 3):158-164.
9. Kandil A, Safran MR. Hip arthroscopy: a brief history. Clin Sports Med. 2016;35(3):321-329. doi:10.1016/j.csm.2016.02.001
10. Rühmann O, Puljić P, Schierbaum B, Wünsch M, Lerch S. Hip arthroscopy technique. Oper Orthop Traumatol. 2021;33(1):55-76. doi:10.1007/s00064-020-00697-1
11. Üzümcügil A, Kurt M, Yılmaz S. Bibliometric approach to total hip arthroplasty literature originating from Turkey. J Contemp Med. 2023;13(4):711-719. doi:10.16899/jcm.1312501
12. Uyar C, Alkan S, Tahmaz A. Research trends and hotspots of osteoarticular involvement in brucellosis. J Zoonotic Dis. 2022;6(2):69-77. doi:10.22034/jzd.2022.14656
13. Seetharam A, Ali MT, Wang CY, et al. Authorship trends in the Journal of Orthopaedic Research: a bibliometric analysis. J Orthop Res. 2018;36(11):3071-3080. doi:10.1002/jor.24054
14. Lazarides MK, Lazaridou IZ, Papanas N. Bibliometric analysis: bridging informatics with science. Int J Low Extrem Wounds. 2023. doi:10.1177/15347346231153538
15. Li Y, Wang W, Chao D, Chai J, Kong L, Zhang H. Arthroscopic treatment of osteoarthritis: a bibliometric study. Ann Palliat Med. 2021;10(12):125752588. doi:10.21037/apm-21-3548
16. Tang F, Dai WB, Li XL, Turghun D, Huang H, Fan YQ. Publication Trends and hot spots in femoroacetabular impingement research: a 20-year bibliometric analysis. J Arthroplasty. 2021;36(8):2698-2707. doi:10.1016/j.arth.2021.03.019
17. Kambhampati SBS, Vaish A, Vaishya R, Patralekh MK. Trends of arthroscopy publications in PubMed and Scopus. Knee Surg Relat Res. 2021;33(1):14. doi:10.1186/s43019-021-00096-1
18. Barbera J, Selverian S, Courington R, Mikhail C, Colvin A. The top 50 most influential articles in hip arthroscopy. Arthroscopy J Arthroscopic Relat Surg. 2020;36(3):716-722. doi:10.1016/j.arthro.2019.09.031
19. Wolf MA, Millenaar D, Winter P, Mahfoud F, Landgraeber S. Comprehensive analysis of scientific output in hip and knee arthroscopy. Acta Chir Orthop Traumatol Cech. 2023;90(4):233-238. doi:10.55095/achot2023/028
20. van Eck NJ, Waltman L. Software survey: VOSviewer, a computer program for bibliometric mapping. Scientometrics. 2010;84(2):523-538. doi:10.1007/s11192-009-0146-3
21. van Eck NJ, Waltman L. Citation-based clustering of publications using CitNetExplorer and VOSviewer. Scientometrics. 2017;111(2):1053-1070. doi:10.1007/s11192-017-2300-7